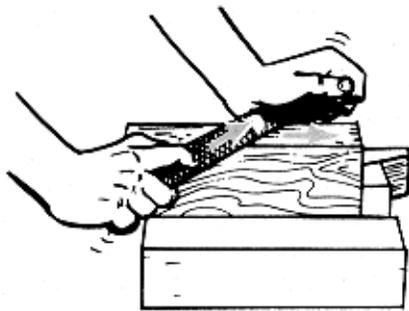




Sanding and Smoothing

Sometimes when you are sawing curves, they become off-square across the length of the wood. They are rough on the edges and need to be smoothed. You can use a round file, a half-round wood rasp, or sandpaper on a dowel to do the job.

You also may want to smooth out a straight, square, crosscut saw cut. For this type of cut, you can use multi-blade wood-forming tools, rasps, or sandpaper. You also can smooth the saw cuts of the pieces in a kit or pre-cut unit.

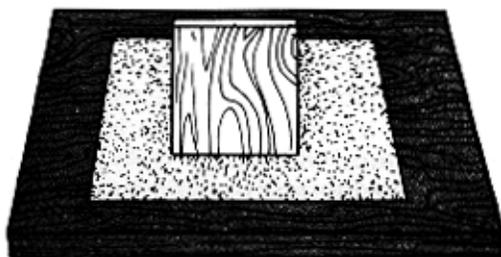


Crosswise and lengthwise stroke

When you use a **rasp**, move the tool lengthwise and diagonally. If you move it crosswise, you will be more likely to break off the edge of the wood.

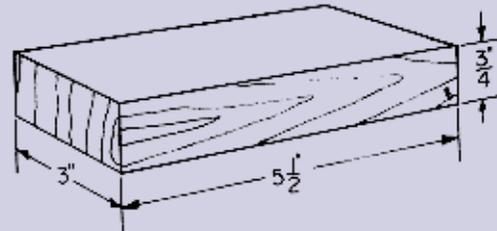
When sanding the edges or sides of the wood, sand in the direction of the grain of wood. If you sand across the grain, scratch marks will show.

Use either a part of a sheet of sandpaper on a block of wood, or glue a full sheet of sandpaper to a piece of flat plywood. Move your piece of wood across the full sheet of sandpaper that you attached to the plywood. For rough cutting, use coarse grit **flint paper** or 50-grit **garnet paper**. For easy smoothing, use fine grit paper or 150- to 200-grit garnet paper.

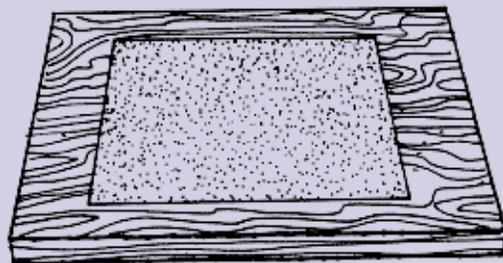


Keep board straight up and down

Tools you will need:



Sanding block to hold your sandpaper (commercial type may be used)



Sandpaper, available in various grades of fine, medium, and coarse grit. (Garnet paper is good, especially for hardwoods. It costs more than flint paper, but cuts faster and lasts longer.) Shown above is a full sheet of sandpaper glued to plywood.



Wood rasp



Shoe or utility rasp

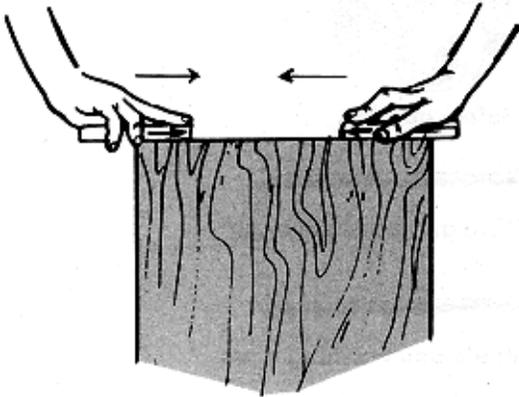


Multi-blade wood-forming tool to smooth and improve saw cuts



Smoothing Wood for a Finish

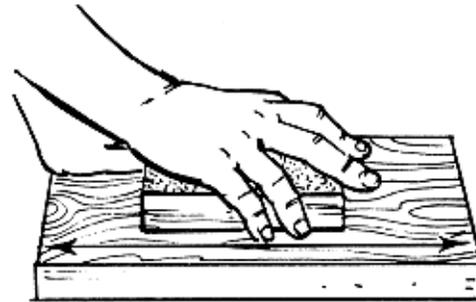
Smooth the ends, edges, and sides of your pieces prior to putting together your project. Then it will be ready for a finish. You may have to do a little touch-up sanding after assembling it. This depends upon how you intend to use the article you have made.



Prevent corner chipping.

To smooth an end grain with sandpaper or rasp, work from both edges towards the center to prevent the grain from chipping off the corners.

For most exterior use, lumber and plywood as they come from the lumberyard are good enough for finishing. But if the wood is dirty or oily, clean these spots either by sandpapering or washing them with a damp cloth that is not too wet.



Sand with the grain.

If you are making a toy, a game, or an article for the home, you may want to sand it. Some plywood is sanded at the factory and requires only a small amount of additional sanding with fine sandpaper. Lumber is not factory sanded. If you look carefully, you may see straight lines or small ridges going across the board, which were made by the planing mill. Your sanding will cut these ridges, producing a flat surface when they are sanded away. You can remove these marks using medium and then fine sandpaper.

Prior to completion, always finish with fine sandpaper. Then carefully wipe off the dust with a clean cloth.

Safety Notes

Remember...

Use special care with rasps and files. Handles that are fastened securely will keep sharp ends from jabbing into your hands.

Things you can do

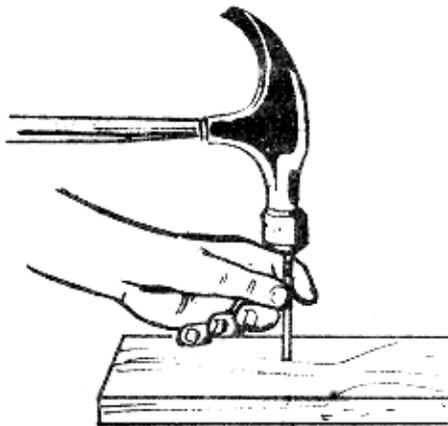
- Name some tools that are used in smoothing and sanding, and show these in an exhibit.
- Show what motion should be used when filing with a rasp, and when rubbing with sandpaper or a sander.
- See "Sandpaper Block" in the Working Plans.



Driving and Pulling Nails

There are many kinds and lengths of nails. Each is designed to do a special job. There are shingle nails, roofing nails, carpet tacks, and ring-shanked nails. Common nails, box nails, and wire nails have flat heads and are used where neatness is not important. Wire brads and finishing nails are used where neatness is important.

Most nails are ordered by “penny” size. The letter “d” is usually written instead of the word penny. One pound of six-penny nails may be written as 1 lb, 6d nails. The length of 2d to 10d nails can be figured out by multiplying the “d” number times $\frac{1}{4}$ inch and then adding $\frac{1}{2}$ inch to that number. How long is a 6d nail? To find out, we multiply 6 times $\frac{1}{4}$, which equals $1\frac{1}{2}$. To that we add $\frac{1}{2}$, which gives us 2. So a 6d nail is 2 inches long.



Grasp nail near the head

To drive nails, we generally use a hammer. A hammer also can be used to pull and straighten nails.

See if you can drive several nails into some scrap wood without bending them, and without making hammer marks on the wood. If you do not strike the nail squarely each time with your hammer, what will happen?

If you had to show someone who has never held a hammer before how to drive a nail, how would you teach him or her?

Most beginners start off holding the hammer near the head, and then move their hand further back as they gain experience.

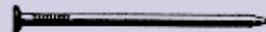
Tools you will need:



A claw hammer with a small handle to pull, drive, and straighten nails. (You could also use a tack hammer.)



Safety goggles



Wire and common nails



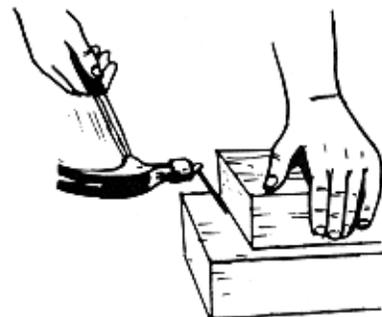
Brads and finishing nails



Nail set to drive nails into surface of the wood without leaving hammer marks

Bent nails may be straightened by holding a hammer or a block against the nail and pounding the leaning side of the nail against the object with another hammer.

Sometimes a short nail can be straightened without holding anything against it.



Straightening a long nail



Safety Notes

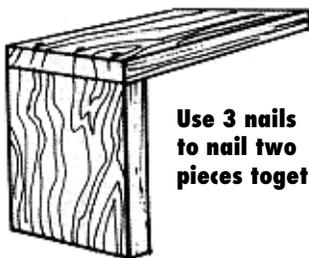
Remember...

- **Keep your fingers out of the hammer's way.**
- **Hit the target flat.**
- **Make sure the hammer head is on tight.**
- **Throw away damaged hammers.**

Nails that are too large, too close to the end of the board, or driven into lumber that is too thin can split the wood. If you must nail near the end of the board or into thin wood, use a small nail or drill a hole a little smaller than the nail.

Things you can do

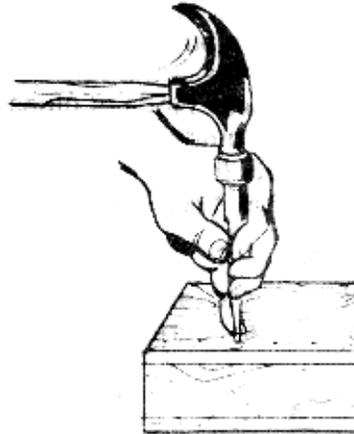
- Practice driving nails into scrap wood. Keep the nails straight and the wood free of hammer marks. Also practice driving in nails that are near the end of the block of wood.
- Drive nails of different lengths into a block of wood. Stop hammering before the head of the nail reaches the surface of the wood. Then practice pulling out the nails without bending them.
- See "Nail Point Design" and "Letter Holder" in the Working Plans.



Use 3 nails to nail two pieces together.

Using a Nail Set

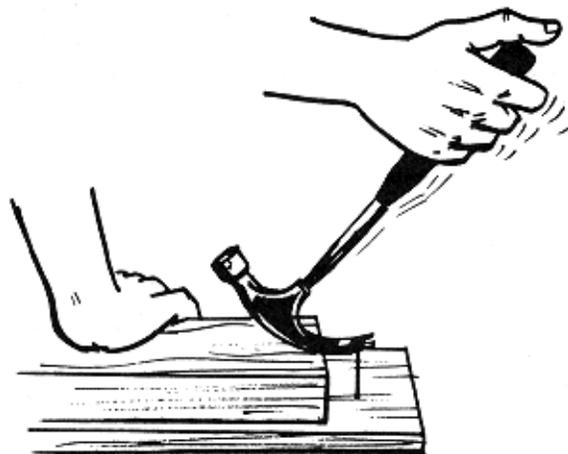
To drive down the nail so that it is even with the board, you may use a **nail set**. It often is used to drive or set the head of the nail below the surface of the wood. Use a nail set smaller than the head of the nail. Place the nail set directly over the head of the nail. Tap it with a hammer rather gently, especially if the nail is a small-sized one.



Using a nail set

Pulling Nails

The claws on the hammer are designed to pull nails. Slide the claws under the nail head, then grasp the hammer handle near the opposite end and apply a firm, steady pull until the nail is out.



Pulling a long nail

When pulling long nails, put a block of wood under the hammer head close to the nail.